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THE PLANT DISEASE REPORTER

Issued By

THE PLANT DISEASE SURVEY

Division of Mycology and Disease Survey

BUREAU OF PLANT INDUSTRY, SOILS, AND AGRICULTURAL ENGINEERING

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The Plant Disease Reporter is issued as a service to plant pathologists throughout the United States. It contains reports, summaries, observations, and comments submitted voluntarily by qualified observers. These reports often are in the form of suggestions, queries, and opinions, frequently purely tentative, offered for consideration or discussion rather than as matters of established fact. In accepting and publishing this material the Division of Mycology and Disease Survey serves merely as an informational clearing house. It does not assume responsibility for the subject matter.

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DIVISION OF MYCOLOGY AND DISEASE SURVEY

Plant Industry Station Beltsville, Maryland
Volume 32 April 15, 1948 Number 4

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SOME UNUSUAL RECORDS: POTATO LATE BLIGHT AND PEPPER DOWNY MILDEW

LATE BLIGHT IN TUBERS FROM FALL CROP OF IRISH POTATOES IN LOUISIANA

By W. J. Martin and C. W. Edgerton

The first record of the occurrence of late blight in tubers from fall crops of Irish potatoes in Louisiana was made on January 23, 1948. On that date specimens with typical late blight symptoms were received from Houma, Louisiana. Mycelium and conidia of *Phytophthora infestans* developed on cut slices of these tubers within 48 hours after they were placed at 20°C.

Reports from Richard Sonnier, county agent in Terrebonne Parish, were that many of the fall-grown tubers in that parish were so badly affected that they could not be sold on the market. As already reported, late blight made its appearance in the fall crop on December 4, 1947 (PDR 32(2): 58). Because of unfavorable weather conditions, the crop could not be dug for several weeks after the plants were severely affected.

LOUISIANA AGRICULTURAL EXPERIMENT STATION, BATON ROUGE

PEPPER DOWNY MILDEW IN FLORIDA

By W. B. Tisdale

On March 1 and 2 two farmers brought pepper plants to our laboratory affected with what appears to be downy mildew (*Peronospora tabacina*). Affected plants showed symptoms similar to blue mold of tobacco, including complete killing of some plants. Conidiophores were abundant on some leaves and only a few on others. The farmers reported that the disease appeared in small areas a week or ten days before, and that it was generally distributed over the beds at the time they brought the plants. Both beds were reported to be some distance from tobacco beds.

In previous years I have seen pepper plants in tobacco beds that remained free of blue mold when the tobacco plants were killed by the disease. At the first opportunity, a survey will be made to learn more about the distribution.

FLORIDA AGRICULTURAL EXPERIMENT STATION, GAINESVILLE

PROGRESS REPORTS ON LATE BLIGHT, TOBACCO BLUE MOLD, AND CUCURBIT DOWNY MILDEW

(Summarized from reports of Warning Service Key Pathologists)

LATE BLIGHT (Phytophthora infestans). Late blight was causing severe losses in unsprayed tomato seed beds in the Everglades section of FLORIDA at the beginning of March, although well-sprayed beds showed none. Adequate spraying programs controlled late blight in tomato fields, and spring potatoes in the region were being sprayed regularly and showed none or only a trace. In lower East Coast sections, hot dry weather prior to March 4 checked its development on tomatoes in the vicinity of West Palm Beach, while around Stuart somewhat farther north all commercial tomato fields, except one that was sprayed on a five-day schedule with Dithane-zinc-lime, were killed by late blight during the latter part of February. Favorable rains and temperatures induced revival of activity in West Coast tomato seed beds March 8. In the North-central section late blight, which had been suppressed since the January freezes, again became active on potatoes by the latter part of February, and a single infection was found in tomato seed beds March 8. In upper East Coast sections, the disease remained active in tomato seed beds in the Sanford region, although it was controlled with copper or Dithane sprays. Late blight was present in several fields near Bunnel, in the southern part of the important Hastings potato area, at the end of February, and was found March 4 in a field near Hastings. Rain, cloudy weather, and cool night temperatures were very favorable to the disease. Most growers were using copper dusts, but it was estimated that about 20 percent of the 11000 acres of potatoes in the section would be sprayed with Dithane.

Late blight has not appeared in TEXAS during the past two seasons. This year it was found March 4 in several scattered fields in the Lower Rio Grande Valley. One 200-acre Bliss Triumph field was rather generally affected and had probably been infected several days earlier. On March 3 the center of the main potato area of about 20,000 acres appeared to be free from late blight, as did tomatoes in the same section. December tomato plantings had been killed by freezes in February and the plants were still very small. Both airplanes and ground machines were being used for dust applications. Wind beginning about 9 o'clock in the morning usually prevents airplane application during the remainder of the day.

TOBACCO BLUE MOLD (Peronospora tabacina). During the first ten days of March blue mold appeared in a large number of beds scattered throughout the flue-cured area of GEORGIA. Widespread disease development, with 100 percent infection in entire beds, has already occurred in some locations where beds are furthest advanced. Growers are spraying or dusting with Fermate.

The first blue mold in Gadsden County, FLORIDA, this year was found by a grower on February 23, a few days earlier than usual, on shade tobacco seedlings. A ten-foot circle and a few smaller spots were affected in a second-year bed, and a two-foot circle in a nearby new bed. Dusting with 20% Fermate in talc was started at once, and some other growers have started dusting.

Condition of beds in both States is generally good, although germination in Georgia was delayed by cool wet weather.

CUCURBIT DOWNY MILDEW (Pseudoperonospora cubensis). In FLORIDA, downy mildew was very active on squash and cucumber plantings in the West Palm Beach and Stuart areas at the beginning of March, and was reported on cucumbers at Sanford during the last week in February and near Ruskin on March 2.

COTTON ASCOCHYTA BLIGHT EPIDEMIC IN ALABAMA IN 1947

A. L. Smith and Coyt Wilson

Ascochyta blight of cotton caused by Ascochyta gossypii Sydow became widespread throughout Alabama in 1947. Disease specimens were received from practically all parts of the State. The smaller number of specimens from the northern part indicated that the disease was less prevalent and less severe there than in the central and southern parts. Losses varied from slight reductions in stands to complete loss of the crop. Following complete loss of stands other crops were usually planted.

The disease did most damage in the early plantings in the southern part of the State, where plants were stunted and making very slow growth. The relatively low temperatures prevailing through April and May with frequent showers were apparently favorable to development of the epidemic. The cotton aphid was also widespread and destructive, often in the same fields, during this period. Damage in some fields could not be definitely attributed to either parasite, since both were prevalent and occurred on the same plants. Both Ascochyta blight and aphids caused losses of stands separately in other fields.

The damage to stands resulted from girdling of stems when the plants were four to twelve inches high. Plants with poor vigor were unable to send out new branches below the girdle or lesions and were killed. Other plants that recovered from the infection were malshaped and often spreading in habit. The disease continued prevalent on stems and leaves of larger plants until about the middle of July when dryer weather and rapid growth of plants prevented new infections and masked the earlier symptoms.

ALABAMA AGRICULTURAL EXPERIMENT STATION AND DIVISION OF COTTON AND OTHER FIBER CROPS AND DISEASES, U. S. DEPARTMENT OF AGRICULTURE

CERATOPHORUM SETOSUM KIRCHN. ON LUPINES IN THE UNITED STATES

J. L. Weimer

In a review of the literature on lupine diseases Gould (Proc. Iowa Acad. Sci. 46: 119-125. 1940) lists as the principal leaf spot one produced by Ceratophorum setosum Kirchn. He states that this fungus has not yet been reported in the United States. So far as the writer has been able to learn, this is still the case. The purpose of this note is to announce the finding of this fungus on blue lupine (Lupinus angustifolius) near Perry, Georgia, on December 9, 1947.

Reference to this fungus as the cause of a leaf spot on many species of lupine is common in European literature. It has also been reported on lupine and on Crotalaria anagyroides in Ceylon and on lupines in Brazil. The fungus is seed-borne which may account for its rather wide distribution. It seems probable that it is much more widely distributed in this country than our present knowledge indicates.

The disease as it was observed in the field was evident as lesions varying in size from 1/2 to 4 mm. in diameter, usually oval to circular in outline but becoming irregular when adjacent lesions merge, and varying in color from purple-drab to blackish brown to fuscous-black. In some lesions a concentric ring pattern was evident. A few lesions are enough to cause the affected leaflets to fall. At the time the disease was found no serious damage was being done. Inoculation experiments, however, indicate that the fungus is capable of doing serious damage to leaves, petioles, and stems under conditions suitable for the rapid development of the fungus. Under such conditions also the color of the lesions is yellowish-green to light brown but gradually changes to the purplish color of the lesions observed in the field. Further observation and study of this disease is under way.

COOPERATIVE INVESTIGATIONS OF THE DIVISION OF FORAGE CROPS AND DISEASES, BUREAU OF PLANT INDUSTRY, SOILS, AND AGRICULTURAL ENGINEERING, AGRICULTURAL RESEARCH ADMINISTRATION, U. S. DEPARTMENT OF AGRICULTURE, AND THE GEORGIA AGRICULTURAL EXPERIMENT STATION

MEADOW NEMATODE ON WEIGELIA IN KENTUCKY

S. Diachun

On February 13, 1948 three small plants of Weigelia (believed to be Edith Rathke), were brought into the laboratory from a nursery in Mt. Sterling, Kentucky.

Some of the roots were tufted or bushy at the ends. Brown discolorations were common on the rootlets, reminiscent of brown root rot of tobacco. A brown lesion was scraped with a scalpel while the root was being observed under a binocular microscope; four nematodes were seen to emerge from the root; they appeared to be meadow nematodes, Pratylenchus pratensis.

Roots were washed in running tap water and then placed in petri dishes with distilled water. Numerous similar nematodes were present in the water the next morning.

UNIVERSITY OF KENTUCKY, LEXINGTON

A FURTHER NOTE ON RICHARD PETERS PEAR IN RELATION TO FIRE BLIGHT RESISTANCE

H. R. Rosen

In a previous note (PDR 31(5): 214-215, 1947) it was reported that a large fireblight [Erwinia amylovora] canker had been found on the trunk of a single tree of Richard Peters. This tree represented a cleft graft made on a four-year old Kieffer in 1938 and the canker involved the region around the graft. It was assumed that the portion blighted represented Richard Peters wood. It now appears that this assumption was erroneous since some of the branches arising from this trunk canker bore fruit this past season (1947) and this fruit was typical of Kieffer. The difficulty of distinguishing between the scion part of the graft from the understock after nine years of growth explains but does not excuse the error.

Furthermore, continued observation of this trunk canker during 1947 indicated that it was wholly superficial, involving only cortical tissue, and apparently not injuring the cambium. As noted above, some of the wood arising from this cankered area bore typical Kieffer fruit of relatively large size and of characteristic flavor and texture with numerous grit cells. (Richard Peters fruit has very few grit cells and is otherwise much superior in quality.)

Unlike trunk cankers on very susceptible varieties such as Bartlett, Bosc, and Anjou, which often kill the trees in Arkansas, this canker remained superficial and otherwise behaved as a typical Kieffer canker. Thus, regardless of the variety involved in the cankered area, some degree of fireblight resistance is indicated.

ARKANSAS AGRICULTURAL EXPERIMENT STATION, FAYETTEVILLE, ARKANSAS

FERRIC DIMETHYL DITHIOCARBAMATE--A SATISFACTORY MATERIAL FOR THE CONTROL OF THE APPLE BLOTCH FUNGUS

John C. Dunegan, M. C. Goldsworthy, and R. A. Wilson

Fifty-four Duchess (Oldenburg) variety apple trees showing numerous twig lesions caused by Phyllosticta solitaria were used for a blotch control experiment at Dover, Delaware, in 1947.

The trees were sprayed May 20 (first cover application) and on June 3 and 17 with the compounds listed in table 1. There were 9 randomized singletree replicates of each of the 6 treatments.

The fruit was harvested on July 7 and the number of blotch-infected apples determined for each treatment. These data, summarized in table 1, show that three of the compounds gave excellent control of the fungus. However, only one of these three materials -- ferric dimethyl dithiocarbamate -- controlled the fungus without producing either russetting of the fruit or scorching of the leaves.

Table 1. Apple blotch control on Duchess apples by various new fungicides, Dover, Delaware, 1947.

Materials	Dilution rate	Number of apples: Total	Sound	With blotch	Percent blotch
Bordeaux mixture	4-4-100	3618	3455	163	4.5
Copper 8-quinolinolate	1-100	3614	3331	283	7.8
2,4 dichloro-1,4 naphthoquinone	3/4-100	3488	2366	1122	32.2
Ferric dimethyl dithiocarbamate	2-100	3432	3329	103	3.0
Dichlorodihydroxydiphenylmethane and lime	1-1-100	3701	2321	1380	37.3
Check--no fungicide		3442	2272	1170	34.0

Difference required for significance between treatments at 1% level: 20.9

The results obtained with ferric dimethyl dithiocarbamate in 1947 confirm the results obtained by Dunegan[1,2] in Arkansas in 1942 and 1943. As the result of these three successful experiments, it is concluded that ferric dimethyl dithiocarbamate (sold under the trade names of Fermate and Karbam Black) can be used to replace bordeaux mixture with marked reduction in the risk of leaf and fruit injury. Ferric dimethyl

1 Dunegan, J. C. Iron dimethyl dithiocarbamate--a possible substitute for bordeaux mixture for the control of apple blotch. Plant Dis. Reptr. 27: 101. 1943.

2 _____. Further results with metal dialkyl dithiocarbamates for the control of the apple blotch fungus. Plant Dis. Reptr. 28: 162-163. 1944.

dithiocarbamate has the disadvantage of leaving a conspicuous dark residue on light-colored fruit. The dark residue is easily removed by brushing and seems to cause no permanent injury to the surface of the fruit.

DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES, BUREAU OF PLANT INDUSTRY, SOILS, AND AGRICULTURAL ENGINEERING, AGRICULTURAL RESEARCH ADMINISTRATION, U. S. DEPARTMENT OF AGRICULTURE

THE CONTROL OF BLOSSOM BLIGHT AND ITS RELATION TO BROWN ROT OF RED BIRD PEACHES AT HARVEST

John C. Dunegan and M. C. Goldsworthy

In the spring of 1947 various materials (listed in table 1) were applied to Red Bird peach trees at Dover, Delaware during the blooming period to determine whether the control of blossom blight [Monilinia fructicola] had any effect upon the incidence of fruit brown rot at harvest time.

The trees were sprayed on April 18 when the first blossoms were opening and again on April 22, 25, and 28. At the end of the blooming period counts were made of the number of blighted blossoms on random trees in all the plots. During the remainder of the season, all the plots, including the blossom-blight check plot, were sprayed with wettable sulfur on May 13, 19, June 2, and 16, and given a preharvest dusting with sulfur on July 2.

The materials used and the results obtained in the blossom-blight and fruit rot phases of the experiment are summarized in table 1.

Table 1. Result of blossom-blight spraying experiments, Red Bird peach variety, Dover, Delaware, 1947

Blossom-blight phase of experiment			Fruit-rot phase of experiment		
Materials	Dilution rate	Percent blossom blight	Material	Dilution race	Percent infected fruit
Wettable sulfur	6-100	11.2	Wettable sulfur	6-100	16.4
2,3 dichloro-1,4 naphthoquinone	3/4-100	2.0	"	6-100	11.8
Ferric dimethyl dithiocarbamate	2-100	12.9	"	6-100	20.8
Copper 8-quinolinolate	1-100	24.2	"	6-100	41.6
Check (no fungicide)	-	32.9	"	6-100	46.6

Difference required for significance at 1% level: Blossom-blight phase - 7.5; Fruit-rot phase - 17.6

One compound, 2,3 dichloro-1,4 naphthoquinone, gave outstanding results in the control of blossom blight and the trees sprayed with this material had less rotted fruit at harvest than did any of the trees sprayed with the other compounds. The trend exhibited by these results indicates that where there is a reduction in the number of blighted blossoms there is also a drop in the number of infected fruit at harvest time.

DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES, BUREAU OF PLANT INDUSTRY, SOILS, AND AGRICULTURAL ENGINEERING, AGRICULTURAL RESEARCH ADMINISTRATION, U. S. DEPARTMENT OF AGRICULTURE

DELETERIOUS EFFECT OF CERTAIN POLYSULFIDES ON SIZE OF WALNUTS SPRAYED THEREWITH

Peter A. Ark and C. Emlen Scott

In the spring of 1947 a mixture of organic polysulfides known as Thiocol WD-2 was used in combination with copper and other sprays in walnut blight [Xanthomonas juglandis] control tests. The main purpose was to enhance the deposition of the basic materials used in the experiments. Although no significant improvement of the sprays resulted from it considerable difference was noticed in the size of the nuts harvested from the treated plots. It was deemed that the information may be of interest to those dealing with the use of similar materials in spray tests. The nuts harvested from the Thiocol plots were smaller.

Table 1. Effect of Thiocol[a] spray in combination with other sprays on size of walnuts.

Spray	Percentage of nuts		
	Large[b]	Medium[b]	Baby[b]
Dry Solcopper[c]	88	12	0
Dry Solcopper plus Thiocol	82	18	0
Liquid Solcopper[d]	90	10	0
Liquid Solcopper plus Thiocol	84	16	0
Yellow Cuprocide[e]	94	6	0
Yellow Cuprocide plus Thiocol	83	17	0
Puratized[f]	93	7	0
Puratized plus Thiocol	87	10	0
Lethane 60[g]	91	9	0
Lethane 60 plus Thiocol	72	28	0

[a] Organic Polysulfides. Made by Thiocol Corporation. Used at 1 pt. to 100 gals.
[b] Official size classes used by California Walnut Growers Association.
[c] Ammoniacal copper made by Sherwin Williams Company, 17% metallic copper. Used at 4 lbs. to 100 gals.
[d] Ammoniacal copper made by Sherwin Williams Company, 3% metallic copper. Used at 2 1/2 lbs. to 100 gals.
[e] Made by Röhm and Haas Company, about 83% metallic copper. Used at 2 lbs. to 100 gals.
[f] Phenyl mercuri triethanol ammonium lactate made by Gallowhur Chemical Company. Used at 1 pt. to 100 gals.
[g] Beta-Thiocyanoethyl ester of fatty acids. Made by Röhm and Haas Company. Used at 1/2 lbs. to 100 gals.

DIVISION OF PLANT PATHOLOGY, UNIVERSITY OF CALIFORNIA, BERKELEY 4.

THE EFFECT OF INCORPORATING TECHNICAL DDT IN SOIL ON THE GROWTH OF BLAKEMORE STRAWBERRY PLANTS

M. C. Goldsworthy and John C. Dunegan

Treating of field soils prior to planting with small quantities of technical DDT[1] has proved effective for the control of Japanese beetle grubs and a number of other soil-inhabiting insects. Fleming[2] and Goldsworthy[3] demonstrated in greenhouse and small-scale pot tests that small quantities of DDT depressed the growth of strawberry plants when incorporated in soils of various types. These investigators further noted that excessive quantities (25,000 pounds per acre) of DDT in the soil did not kill strawberry plants.

The experiments described in this paper deal with the effects of DDT upon strawberry plants when it is mixed with soil under field conditions.

Materials and Methods

The experimental plan called for the application of 6, 12, 25, 50, and 100 pounds of DDT[4] per 6 2/3 acre-inches (2,000,000 pounds) of soil; and these treatments were applied to an experimental area 300 feet long and 14 feet wide located at the Plant Industry Station, Beltsville, Maryland. This area was divided into 45 plots, each 20 feet long and 3 1/2 feet wide, thus permitting a randomized arrangement of 9 replicates of each of the 5 treatments.

The soil in the experimental area was typically a Sassafras sandy loam, fairly well drained and easily leached; and it had been used for several years for the cultivation of strawberries.

The terrain of the experimental area was generally flat, and following

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1 DDT, the commonly accepted abbreviation, is used throughout this paper for the chemical dichloro diphenyl trichloroethene.

2 Fleming, W. E. (Unpublished report of the Bureau of Entomology and Plant Quarantine.

3 Goldsworthy, M. C. Effect of aging on technical DDT when mixed with soils and its relation to the growth of Blakemore strawberry plants. To be published.)

4 The Dupont product 25 W. Deenate was used throughout this experiment. This material is composed of 75% clay and 25% technical DDT which contains approximately 80% by weight of the para-para DDT isomer, 19% of the ortho-para DDT isomer, and a small percentage of several other chemicals among which are para-para dichloro diphenyl dichloroethane and bis-p-chlorophenyl sulfone, and a small quantity of sodium lauryl sulfate used as a wetting agent.

several heavy rain storms water accumulated in certain spots and the growth of the plants was slightly affected in these areas.

Each plot contained 70 square feet and the amount of the 25 percent DDT formulation used was 18.5 grams for the 6-pound treatment, 37.0 grams for the 12-pound, 73.0 grams for the 25-pound, 146 grams for the 50-pound, and 292 grams for the 100-pound treatment.

The quantity of DDT for each individual plot was mixed thoroughly with approximately 50 pounds of soil from the plot and then spread uniformly over the 70-foot area and mixed into the soil to a depth of 3 to 4 inches.

Blakemore strawberry plants (1-year-old) were set 1 foot apart in a single row on March 21, 1947 in all the plots, and they grew in the field until October 30, 1947, an interval of approximately 7 months.

The individual plots were cultivated separately from time to time throughout the season to eliminate weeds. The plants were sprayed once during the summer with 1 pound of DDT added to 100 gallons of bordeaux mixture to prevent Japanese beetle injury to the leaves. This spray treatment added approximately 3.6 grams of DDT to the surface of each plot.

The soil was left untreated in an area adjacent to the experimental plots in order to ascertain the effect of Japanese beetle grubs in the soil upon the growth of strawberry plants. This was necessary to permit the evaluation of the insect injury factor as distinguished from the chemical injury factor in the main experimental area. These non-treated plots were not included in the main randomized plot arrangement as they introduced a second variable (i.e., insect injury) which was not being investigated. However, under the conditions which prevailed in 1947, grub injury did not occur in the non-treated plots.

Results

On October 30, 1947 the mother plants and the runners with their root systems intact, were dug and the sandy soil was removed from the root crown by shaking. The total number of plants (mother and runner) was ascertained from each plot, as well as their green weight. The plants were then dried at 70° C. for 12 hours to obtain their dry weight.

The data from each treatment (mean of the various replicates) is given in Table 1 and it can be seen that treatments of 12 pounds or more of DDT per acre materially affected the growth of the strawberry plants. The number of individual plants and their resultant green and dry weights are significantly less than for those grown on soil treated with 6 pounds of DDT per acre. When plants from the DDT-treated plots were compared with plants of similar age from the adjacent non-treated plots, two

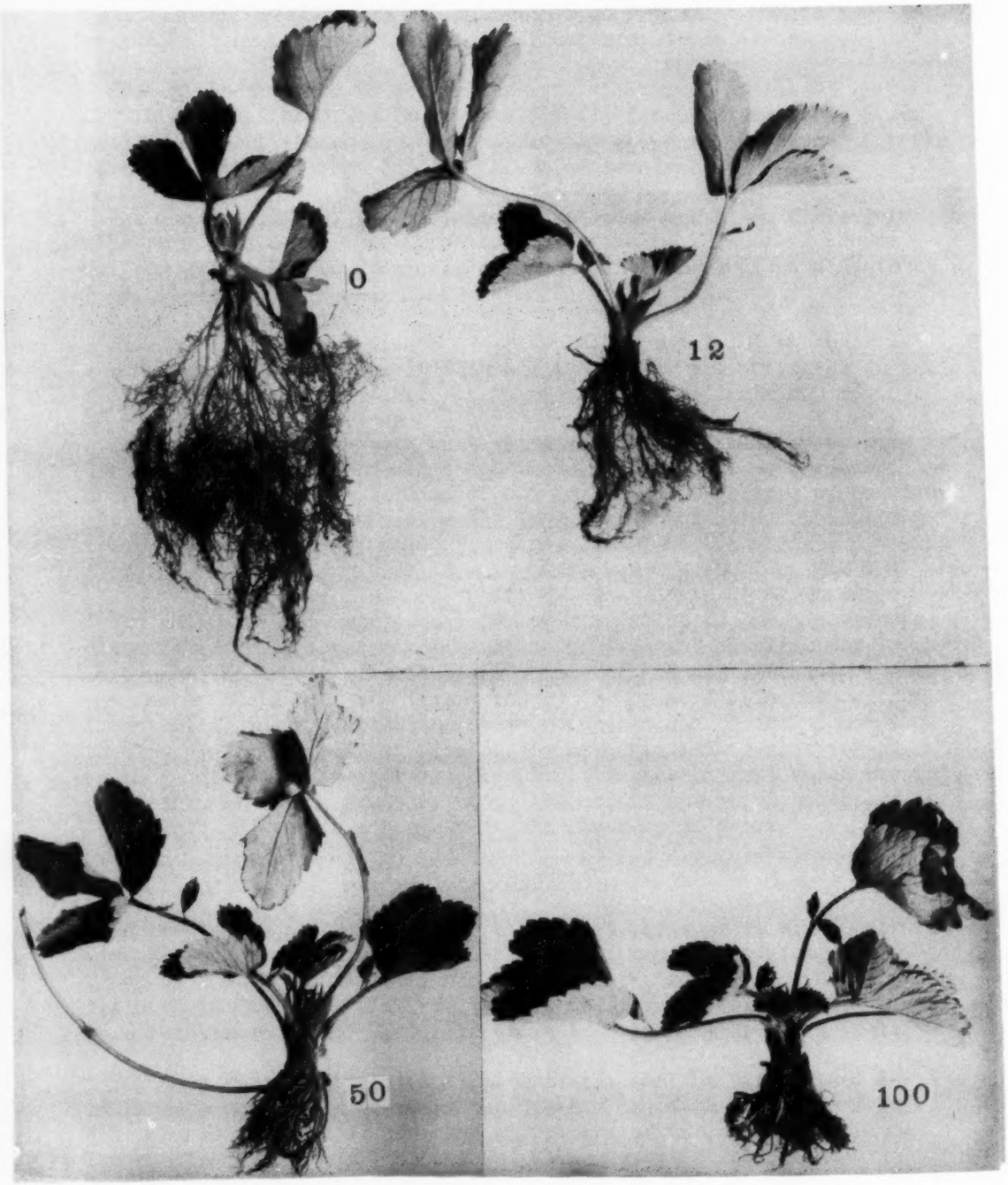


Plate 1. Effect of various quantities (12, 50, or 100 pounds per acre) of technical DDT added to field soil on the growth of Blakemore strawberry roots.

Table 1. Effect of incorporating DDT into the soil on the production of Blakemore strawberry plants set March 21 and dug October 30, 1947.

Treatment	Number of plants produced	Difference from 6 lb. base	Gram weight	Difference from 6 lb. base	Dry weight	Difference from 6 lb. base	Green weight per plant	Dry weight per plant
		Grams	Grams	Grams	Grams	Grams	Grams	Grams
None	996		5692		1854		5.7	1.9
6 lbs. DDT per acre	896[a]		5496[a]		1800[a]		6.1	2.1
12 " " " "	787	109	4956	540	1629	171	6.3	2.1
25 " " " "	667	229	4092	1404	1343	357	6.1	2.0
50 " " " "	641	255	3784	1712	1316	384	5.9	2.0
100 " " " "	498	398	3112	2384	1076	624	6.2	2.1
Least significant difference 1-19		108.49		680.96		193.90		
Least significant difference 1-99		145.64		914.64		260.44		

[a] Average of nine replicated and randomized plots. Non-treated plots were not randomized and were not included in the analysis of variance.

distinct differences were immediately apparent: the leaves from the non-treated plants were more succulent and the plants had a much larger and more fibrous root system. The leaf characters are difficult to depict photographically but the thickening of the main and secondary roots and the reduction in the number of fibrous roots, of the treated plants, are shown in Plate 1.

While, of course, this effect was most evident in plants growing in soil treated at the rate of 100 pounds per acre, it was still faintly discernible when as little as 6 pounds per acre was used. The changes in the root system apparently influence the physiology of the plant sufficiently to reduce the production of runner plants. An examination of the nontreated plants showed numerous young runner plants still being formed in October and these small plants had not had time to attach themselves to the soil, whereas in the treated plots there was much less runner formation at digging time and those young plants that had formed were well rooted. When plants of similar age were compared, those from the nontreated plots were actually larger on a weight basis than those from the treated plots.

Discussion

During the course of several years of experiments dealing with the additions of technical DDT to soil, Goldsworthy (footnote 3) has found that plants of the Blakemore strawberry variety are quite sensitive to its presence in the soil. The experiments presented in this paper show that this variety of strawberry is affected by as little as 12 pounds of technical DDT when added to an acre of soil 6-2/3 inches deep, a rate of 6 p.p.m. This effect has persisted for at least two crop years.

This may have a serious implication, since it indicates that successive annual accretions of the chemical over a period of years, either directly or through spraying practices, once it is added to the soil, may be sufficient to cause injury to subsequent plantings of Blakemore strawberry plants. How many other economic crop plants may be injured is unknown, but it appears certain that some caution is necessary in the promiscuous use of the chemical on fiber, vegetable, and fruit crops and other economic plants, either as insecticidal sprays or as soil additions to combat insects in the soil.

In our work we have never observed any evidence that technical DDT, mixed with the soil, causes necrotic injury to Blakemore strawberry plants. Even when used at extraordinary and excessive rates the plants will grow and produce new leaves and remain alive for relatively long periods of time. However, the root system, when in contact with a soil containing appreciable quantities of the chemical, appears to be limited in its capacity to grow. The smaller root system cuts down the absorption area of the plant, and plant growth then appears to be curtailed in proportion to this loss.

SUMMARY

Experimental results are presented in this paper showing the effect of adding technical DDT to the soil in field plots on the subsequent growth of Blakemore strawberry plants.

Concentrations of 6, 12, 25, 50, and 100 pounds of technical DDT to the acre (acre with 6-2/3-inch profile) were mixed with Sassafras sandy loam soil to a depth of 3-4 inches in field plots at the Plant Industry Station, Beltsville, Maryland. The treated soil was then planted on March 21, 1947. At the end of the growing season, October 30, 1947, the mother and runner plants were harvested, counted, and weighed for green weight and dry weight.

The results indicated that there was a significant reduction in the number of new runner plants and in the correlated green and dry weights of the plants when the soil concentration of technical DDT reached a value of 12 pounds to the acre. At increasing dosages the losses were

significantly higher until at 100 pounds to the acre the number of plants and the green and dry weight values were approximately half those reached in the 6-pound plot.

This reduction is attributed to the physiological change induced by DDT upon the root system, which is characterized by a thickening of the main and secondary roots and a loss of the ability to form fibrous roots. As a result of this reduction in root system, the treated plants grew less vigorously, matured earlier, and produced fewer runners.

In no case was the toxic action of DDT sufficient to kill the mother plants.

DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES, BUREAU OF PLANT INDUSTRY, SOILS, AND AGRICULTURAL ENGINEERING, AGRICULTURAL RESEARCH ADMINISTRATION, U. S. DEPARTMENT OF AGRICULTURE

CHECK LIST REVISION

Freeman Weiss

BRICKELLIA. See PDR. 24: 390. 1940.

CALENDULA (COMPOSITAE)

CALENDULA OFFICINALIS L., POT MARIGOLD. Annual of s. Europe, widely grown as a garden flower and under glass for cutting.

Alternaria sp., leaf spot (? secondary). N.Y.
Botrytis cinerea Pers. ex Fr., gray-mold blight. Mo., N.J., N. Y., Alaska
Cercospora calendulae Sacc., leaf spot. Pa., Tex., Va.
Colletotrichum gloeosporioides Penz., leaf and stem spot. Va.
Entyloma calendulae (Oud.) DBy., white smut. Calif., N.H., Ore.
E. compositarum Farl. Wash.
Erysiphe cichoracearum DC., powdery mildew. Calif., ? N. Y.
E. polygoni DC. Pa.
Heterodera marioni (Cornu) Goodey, root knot. Tex., W.Va., Hawaii
Puccinia flaveriae Jacks. (III), rust. Ill., Ind., Iowa, Kans., Mo., Nebr., Tex.
Pythium ultimum Trow, root rot. Calif.
Rhizoctonia solani Kuehn, stem rot. Ind., N.J., N.Car., Tex.
Sclerotinia sclerotiorum (Lib.) DBy., stem rot, wilt. Calif., Fla., La., Mo., Ohio, Tex.
Sclerotium rolfsii Sacc., southern blight. Tex.

Mosaic -- unidentified virus (perhaps cucumber mosaic, Marmor cucumeris Holmes). Conn., Iowa, Kans., Minn., Miss., Tex.
Spotted wilt -- virus (Lethum australiense Holmes, Lycopersicon virus 3 K.M.Sm.). Calif., Mich., Tex.
Yellows -- virus (Chlorogenus callistephi Holmes, Callistephus virus 1 K.M.Sm.) Conn., Del., Me., N.J., N.Y., Pa., Va. Also C. callistephi var. californicus Holmes in Calif.

CALLISTEPHUS (COMPOSITAE)

CALLISTEPHUS CHINENSIS (L.) Nees, CHINA ASTER. Annual of China and Japan, important garden and cut flower of late summer, with commercial production in the Northeastern and Central States and especially California.

Alternaria sp. (chiefly A. tenuis Nees ex Cda.), secondary leaf spot and seed mold. Cosmopolitan.

CALLISTEPHUS cont.

Ascochyta asteris (Bres.) Gloyer, leaf spot. Calif., N.Y., N.Dak., Ohio.

Basidiophora entospora Roze & Cornu, downy mildew. Fla., Tex.

Botrytis cinerea Pers. ex Fr., gray mold blight, stem canker. Calif., Conn., Ill., N.J., N.Y., Pa., Wis. Alaska.

Coleosporium solidaginis (Schw.) Thuem. (II,III), rust. General except the far South. O and I on 2- and 3-needle Pinus spp.

Colletotrichum sp. (? gloeosporioides Penz.), anthracnose. Fla.

Cuscuta spp., dodder. Reported in Mass. and N.Y., but doubtless widespread.

Diaporthe arctii (Lasch) Nits., on stems. N.J.

Erysiphe cichoracearum DC., powdery mildew. Del., Minn., Nebr., N.Car., Vt., Wash.

E. polygoni DC. N.J.

Fusarium oxysporum Schlecht. f. callistephi (Beach) Snyder & Hansen (F. conglutinans Wr. var. callistephi Beach), wilt, stem rot. General.

?F. culmorum (W.G.Sm.) Sacc. (=F. roseum Lk. emend Snyder & Hansen), secondary stem rot (or saprophytic) Widespread, following wilt.

Heterodera marioni (Cornu) Goodey, rootknot. Conn., Fla., Tex., Wash.

Phomopsis callistephi Tehon & Daniels, stem canker. Ill., Wis., ?Md. Perhaps the pycnidial stage of Diaporthe arctii.

Phymatotrichum omnivorum (Shear) Dug., root rot. Tex.

Phytophthora sp., blackleg, foot rot. Md.

P. cryptogea Pethyb. & Laff. Calif., Ill.

Pleospora herbarum (Pers. ex Fr.) Rabh., seed mold. Cosmopolitan

Pythium ultimum Trow, root rot. Calif., N.Dak.

Rhizoctonia solani Kuehn, root and stem rot. Widespread, chiefly in the Northeastern and North Central States; leaf blight also reported in N.J.

Sclerotium rolfsii Sacc., southern blight. Miss., N.Car.

Septoria callistephi Gloyer, leaf spot. Ala., Del., Ill., Mich., Mo., N.J., N.Y., Ohio, Pa.

Verticillium sp. (? albo-atrum Reinke & Berth.), wilt. Conn., Mass.

Curly top -- virus (Chlorogenus cutetticola Holmes, Beta virus 1 K.M.Sm.) Ore.

Spotted wilt -- virus (Lethum australiense Holmes, Lycopersicon virus 3 K.M.Sm.). Calif.

Yellows -- virus (Chlorogenus callistephi Holmes, Callistephus virus 1 K.M.Sm.). General. Also C. callistephi var. californicus Holmes, Callistephus virus 1A K.M.Sm., in Calif. and perhaps other Western States.

CARTHAMUS (COMPOSITAE)

CARTHAMUS TINCTORIUS L., SAFFLOWER. Annual of s. Asia; grown for ornament here, elsewhere as source of red dye and for oil-containing seed.

Alternaria sp., leaf spot. Ind.
Gloeosporium carthami (Fukui) Hori & Hemmi; anthracnose, blight. Ind., Tex., Va.
Heterodera marioni (Cornu) Goodey, root knot. ?Fla.
Phoma sp., on leaves. Ind.
Puccinia carthami Cda. (II,III), rust. Mass. O produced on same host experimentally.
Sclerotinia sclerotiorum (Lib.) DBy., stem rot, wilt. Ind., N. Dak., Va.
Septoria carthami Murashkinsky, leaf spot. Ind., Tex.

CENTAUREA (COMPOSITAE)

CENTAUREA AMERICANA Nutt., BASKETFLOWER (1) and C. CYANUS L., CORNFLOWER, BATCHELORS-BUTTON (2); annuals, (1) indigenous in the lower Mississippi Valley, (2) in Europe, the latter widely grown as a garden flower and often escaped. C. CINERARIA L., DUSTY MILLER (3) and C. MONTANA L., MOUNTAIN BLUET (4); perennials of Europe, grown for ornamental foliage and flowers. Other spp. (5).

Albugo tragopogonis Pers. ex S.F.Gray, white rust. Tex. (5)
Bremia lactucae Regel, downy mildew. Calif. (2)
Cuscuta sp., dodder. Tex. (1)
Erysiphe cichoracearum DC., powdery mildew. Calif. (1,5); Conn. (3)
Fusarium oxysporum Schlecht. ?f. callistephi (Beach) Snyder & Hansen, stem rot, wilt. Mich. (2)
Heterodera marioni (Cornu) Goodey, rootknot. Calif., Fla. (2); Ohio (5)
Phymatotrichum omnivorum (Shear) Dug., rootknot. Tex. (1,5)
Phytophthora cactorum (Leb. & Cohn) Schroet., stem rot. N.Y. (1,2)
Plasmopara halstedii (Farl.) Berl. & DeT., downy mildew. Iowa (5)
Puccinia cyani (Schleich) Pass. (O,I,III), rust. Mass. to N.Car. and Ind.; Calif., Ore., Wash. (2); Md. (5)
P. irrequisita Jacks. (II,III), rust. Tex. (1). O and I unknown.
Pythium sp., root rot. N.J. (2)
Rhizoctonia solani Kuehn, root and stem rot. Ind., N.J., N.Y., Tex. (2); Ill. (5)

CENTAUREA cont.

Sclerotinia sclerotiorum (Lib.) DBy., stem rot, wilt. Miss., Mo. (2); Ind. (4); Calif., Miss., Tex. (5)

Sclerotium rolfsii Sacc., southern blight. Conn., Md., Tex. (2); N.J. (5)

Septoria sp., on leaves and stems. Ore. (2)

Verticillium albo-atrum Reinke & Berth., wilt. N.Y. (2)

Yellows -- virus (Chlorogenus callistephi Holmes, Callistephus virus 1 K.M.Sm.). Pa. (5). C. callistephi var. californicus Holmes, Callistephus virus 1A K.M.Sm. Calif. (1,2)

CHRYSANTHEMUM

CHRYSANTHEMUM MORIFOLIUM (Ramat.) Hemsl. (C. sinense Sabine, C. hortorum Bailey; C. indicum L. in part, but not typically), FLORISTS CHRYSANTHEMUM. Cultigen of Chinese origin, long cultivated in gardens as a perennial and widely in greenhouses as a cut flower; some garden types now include C. coreanum Hort.

Agrobacterium tumefaciens (E.F.Sm.&Town.) Conn, crown gall. Conn., N.J., Tex.

Alternaria sp., leaf spot (?secondary). Okla., Tex. A. tenuis Nees ex Cda. occurs commonly on leaves attacked by nematodes and Septoria.

Aphelenchoides ritzema-bosi (Schwartz) Steiner & Buhrer, leaf nematode. Reported in Conn., Ind., Md., N.J., N.Y., Ohio, Pa., Tex. and Wash., but probably more widely distributed.

Ascochyta chrysanthemi F.L.Stevens, ray blight. Miss., N.J., N.& S.Car., Ohio

Botrytis cinerea Pers. ex Fr., gray-mold blight (flowers and buds, sometimes leaves and tips of cuttings). Cosmopolitan.

Cercospora chrysanthemi Heald & Wolf, leaf spot. Ala., La., Md., Pa., Tex.

Corynebacterium fascians (Tilford) Dowson, fasciation. Mich., N.J., N.Y., Ohio.

Cuscuta sp., dodder. Mich., N.J., N.Y., Wash., W.Va. C. arvensis Beyrich and C. indecora Choisy. Tex.

Cylindrosporium chrysanthemi Ell. & Dearn., leaf spot. Mass. to Ala. and Kans. Said to be identical with Septoria chrysanthemella Sacc. (q.v.) by some authors, and maintained as distinct by others.

Erwinia carotovora (L.R.Jones) Holland, bacterial stem rot. Okla.

Erysiphe cichoracearum DC. (Oidium chrysanthemi Rabh.), powdery mildew. General.

Fusarium sp., root and stem rot, wilt (?secondary). Ala., Fla., Ill., N.H., N.J., Ohio, Okla., Tex., Va.

F. oxysporum Schlecht. f. callistephi Snyder & Hansen, wilt. Okla.

Heterodera marioni (Cornu) Goodey, rootknot. N.J. to Fla., Tex. and Kans.; Calif., Wash.

CHRYSANTHEMUM cont.

Phyllosticta chrysanthemi Ell. & Dearn., leaf spot. Fla., Mass., Miss., Va.

Phymatotrichum omnivorum (Shear) Dug., root rot. Ariz., Tex.

Pratylenchus pratensis (DeMan) Filip., root nematode. N.J., Tex.

Puccinia chrysanthemi Roze (II), rust. General. The telial stage is known only in Japan; 0 and I unknown.

Pythium sp., root rot. N.Dak., Tenn., Tex. P. ultimum Trow. Md.

Rhizoctonia solani Kuehn, root and stem rot. Ariz., Colo., Conn., Ill., Md., N.J., N.Car., Tex., P.R.

Sclerotinia sclerotiorum (Lib.) DBy., stem rot, drop. Ariz., Mich., Va. Blossom rot, La.

Sclerotium bataticola Taub., charcoal rot. Okla.

S. rolfsii Sacc., southern blight. Fla., Va.

Septoria chrysanthemi Allesch., leaf spot. Reported throughout the Eastern and Central States to Fla. and Tex., also in Colo. and Calif.; probably often confused with the following sp. The following names, used in reports, appear to be synonyms: S. chrysanthemi Cav., S. chrysanthemella Sacc., S. rostrupii Sacc. & Syd., S. chrysanthemi-indici Kab. & Bub.

S. leucanthemi Sacc. & Speg., leaf blotch, leaf blight. Specific reports under the names listed below only in Conn., Md., N.J., N.Y., Tex., Wash., but probably as widespread as the preceding sp. and often confused with it. S. cercosporoides Trail, S. macrosporia Dearn., and S. obesa Syd. appear to be synonyms.

Verticillium albo-atrum Reinke & Berth., wilt. Ill., Ind., Md., Mass., Mich., Minn., N.J., N.Y., Ohio, Pa., Wash. In some varieties does not cause a typical wilt, but general stunting, tip blight, sometimes leaf spot.

Dwarf -- suspected virus. Wash.

Mosaic -- unidentified virus. Calif., Colo., Md., N.J., Ohio

Spotted wilt -- virus (Lethum australiense Holmes, Lycopersicon virus 3 K.M.Sm.). Calif., Wash.

Stunt -- suspected virus. Perhaps the same as dwarf and mosaic.

Yellows -- suspected virus, sometimes reported as Chlorogenus callistephus Holmes, Callistephus virus 1 K.M.Sm., but not confirmed; perhaps = mosaic or stunt. Conn., Mich., Miss., N.J., N.Y., Ohio.

Crack-neck -- physiological, attributed to overwintering and deficient ventilation. Occasional in greenhouses.

CHRYSANTHEMUM spp. C. CARINATUM L., TRICOLOR CHRYSANTHEMUM (1), C. CORONARIUM L., GARLAND (2), and C. SEGETUM L., CORN-MARIGOLD (3) -- Old World annuals, grown as garden flowers and sometimes escaped; C. CINERARIAEFOLIUM (Trev.) Vis., DALMATIAN PYRETHRUM (4), and C. COCCINEUM Willd., COMMON P. (5) -- perennials grown

CHRYSANTHEMUM cont.

for ornament, the former also yielding an insecticide; C. FRUTESCENS L., MARGUERITE (6), a perennial of the Mediterranean Region, grown for cut flowers usually under glass; C. LEUCANTHEMUM L., OX-EYE DAISY (7), especially the var. PINNATIFIDUM Lecoq. & Lamotte, is widely naturalized from Europe and a troublesome weed in meadows in the Northeast; C. MAXIMUM Ramond, SHASTA DAISY (8), and C. PARTHENIUM (L.) Bernh., FEVERFEW (9) -- hardy perennials of s. Europe, grown in gardens.

Agrobacterium tumefaciens (E.F.Sm. & Town.) Conn, crown gall. Iowa, Md., N.J., N.Y., Va., Wash., Alaska (6)

Botrytis cinerea Pers. ex Fr., gray mold blight. Pa. (5)

Cercospora chrysanthemi Heald & Wolf, leaf spot. Okla. (8)

Corynebacterium fascians (Tilford) Dowson, fasciation. Conn., Md. (5)

Diaporthe arctii (Lasch) Nits., on stems. Ga. (6)

Ditylenchus dipsaci (Kuehn) Filip., stem nematode. N.Y. (7)

Erysiphe cichoracearum DC., powdery mildew. N.J. (6), N.Y. (9)

Fusarium roseum Lk. emend Snyder & Hansen and F. solani (Mart.) App. & Wr., stem rot. Tex. (7,8)

Heterodera marioni (Cornu) Goodey, rootknot. Fla., Md., Miss., Ohio, Tex., Wash. (2,4,5,6,7,8)

Gloeosporium sp., damping off. Pa. (5)

Phymatotrichum omnivorum (Shear) Dug., root rot. Tex. (4,7)

Pythium sp., root rot. Colo. (5), N.J. (8)

Rhizoctonia solani Kuehn, root and stem rot. Md. (8); N.J. (5); Wash. (9); P.R. (4)

Sclerotinia sclerotiorum (Lib.) DBy., stem rot, drop. Va. (5) Tex. (7); Mont., Wash. (8)

Sclerotium rolfsii Sacc., southern blight. Tex.(7)

Septoria chrysanthemi Allesch. (? S. chrysanthemella Sacc.), leaf spot. N.Y. (3,7); Conn., Iowa, Vt., Wis. (7)

S. leucanthemi Sacc. & Speg. (? S. cercosporioides Trail, S. macrosporia Dearn.), leaf blotch. Conn., N.Y. (7); Calif., Ore. (8)

Verticillium albo-atrum Reinke & Berth., wilt. N.J. (6)

Curly top -- virus (Chlorogenus eutetticola Holmes, Beta virus 1 K.M.Sm.). Calif. (2,6)

Yellow dwarf -- virus (Marmor vastans Holmes, Solanum virus 16 K.M. Sm.). N.Y. (7)

Yellows -- virus (Chlorogenus callistephi Holmes, Callistephus virus 1 K.M.Sm.). Kans., N.J., N.Y. (7). Also var. californicus Holmes, Callistephus virus 1A K.M.Sm. Calif. (1,3,6)

CHRYSOPSIS (COMPOSITAE)

CHRYSOPSIS spp., GOLDEN ASTER. Mostly perennial herbs of dry plains and woodlands, widely distributed in the U.S.; some are grown in wild gardens and some are useful to wildlife.

Cercospora macroguttata Atk., leaf spot. Ala., Miss.
Coleosporium solidaginis (Schw.) Thuem. (II,III), rust. Colo., Fla., Nebr. C and I on Pinus spp.
Erysiphe cichoracearum DC., powdery mildew. Mont., Wyo.
Puccinia grindeliae Pk. (III), rust. Calif., Colo., Okla., Utah, Wyo.
P. stipae Arth. (C,I), rust. Ariz., Colo., Fla., Mont., Nebr., Wyo. II and III on Oryzopsis and Stipa
Ramularia chrysopsidis Dearn., leaf spot. N.Y.

CHRYSOTHAMMUS. See PDR. 25: 8. 1941

CICHORIUM (COMPOSITAE)

CICHORIUM ENDIVIA L., ENDIVE, ESCARCLE (1). Annual or biennial herb, probably of India, cult. as a salad plant. C. INTYBUS L., CHICORY (2). Perennial herb of Europe, cult. for roots, which are used as a coffee substitute, and for esculent leaves; also widely naturalized.

Alternaria sp., leaf spot (? secondary). Fla. (1,2); Conn., N.Y. (1); Wis. (2)
Botrytis cinerea Pers. ex Fr., gray-mold rot. Calif., Fla., N.Y., Pa. (1)
Bremia lactucae Regel, downy mildew. Fla., Pa. (2)
Cercospora cichorii J.J.Davis, leaf spot. Tex. (1,2); Mich., N.Y., Wis. (2)
Erwinia carotovora (L.R.Jones) Holland, bacterial soft rot. Mass., N.Y., Tex. (1); Calif. (2)
Erysiphe cichoracearum DBy., powdery mildew. Ida., N.J. (2)
Fuligo septica (L.) Weber, slime mold. N.J.
Heterodera marioni (Cornu) Goodey, rootknot. Tenn. (1), Mass. (2)
Marssonina panattoniana (Berl.) Magn., leaf spot. Tex. (1)
Phoma sp. (? P.albicans Rob. ex Desm.), root rot. N.Y. (1)
Phymatotrichum omnivorum (Shear) Dug., root rot. Ariz. (1); Tex. (1,2)
Pseudomonas cichorii (D.B.Swing.) Stapp, and P. intybi (D.B. Swing.) Stapp, center rot. Mont. (1,2) Bacterial rot attributed to unnamed organisms is reported also in Ariz., Fla., Tex., and Wash.

CICHORIUM cont.

Puccinia hieracii (Schum.) Mart., (C,I,II,III), rust. Calif., Conn., Mass., N.Y. (1); Calif., Conn., N.Y., Ore., Pa., Vt., Wash., Wis. (2)

Pythium debaryanum Hesse, root rot. Conn., Fla. (1)

Ramularia cichorii Dearn. & House, leaf spot. N.Y. (2)

Rhizoctonia solani Kuehn, bottom rot, damping off. Conn., Fla., N.Y., Tex. (1)

Sclerotinia sclerotiorum (Lib.) DBy., watery soft rot, drop. Ariz., Ark., Calif., Fla., Ga., La., Mont., Pa., Tex. (1); Tex., Wash. (2)

Sclerotium rolfsii Sacc., southern blight. Fla., Tex. (1,2)

Mosaic -- unidentified virus. Fla. (1)

Spotted wilt -- virus (Lethum australiense Holmes, Lycopersicon virus 3 K.M.Sm.). Calif. (1,2)

Yellows -- virus (Chlorogenus callistephi Holmes, Callistephus virus 1 K.M.Sm.). Colo., Ill., ?Ind., N.J., N.Y., Tex., Wis. (1); Ind., N.Y., Tex. (2). Also var. californicus Holmes, Callistephus virus 1A K.M.Sm. Calif.

Brown heart, canker -- in part, boron deficiency. N.J., N.Y. (1); Tex. (2). Perhaps in part bacterial.

Tipburn -- physiological, attributed to high temperature and excessive transpiration. Ariz., N.Y. (1); Calif. (2)

CIRSIUM (COMPOSITAE)

CIRSIUM spp., THISTLE. Coarse, biennial or perennial herbs, mostly in waste ground and without economic importance except utility to wildlife, as C. ALTISSIMUM (L.) Spreng. (1), C. DISCOLOR (Muhl.) Spreng. (2), C. LANCEOLATUM (L.) Hill (3), C. MUTICUM Michx. (4), C. OCCIDENTALE (Nutt.) Jepson (5); C. UNDULATUM (Nutt.) Spreng. (6); these spp. endemic in the Eastern and Central States except (3) which is widely naturalized from Europe, (5) in Calif., and (6) in the Western States. C. ARVENSE (L.) Scop., CANADA THISTLE (7), widely naturalized from Europe and a troublesome agricultural weed; and other spp. (8), some of the introduced ones are planted for ornament.

Acanthostigma occidentale (Ell. & Ev.) Sacc., on leaves. Ill., Iowa (1,2); Wis. (2)

Albugo tragopogonis Pers. ex S.F.Gray, white rust. Mich. (1); Wis. (3); Mich., Minn., N.Y., Ohio, Wis. (4); Tex. (6); N.Y. to Iowa and Wyo. (7); La. (8)

Cercospora spp., leaf spot. C. cirsii Ell. & Ev. Wash. (8); C. ditissima Ell. & Ev. and C. obesa Ell. & Ev. Kans. (6); C. kansensis Syd. (1). Kans.

CIRSIUM cont.

Cuscuta sp., dodder. N.Y. (7)
Diaporthe arctii (Lasch) Nits., on stems. Ga. (1)
Ditylenchus dipsaci (Kuehn) Filip., stem nematode. (3)
Erysiphe cichoracearum DC., powdery mildew. General on all spp. listed except (5) and (7).
Fusarium sp., wilt. Wash. (7)
Heterodera marioni (Cornu) Goodey, rootknot. Kans., Ohio (7)
Ophiobolus acuminatus (Sow. ex Fr.) Duby, on stems. Kans., Mich. (1); N.Y. (3); N.Dak. (8)
Phyllactinia corylea Pers. ex Karst., powdery mildew. Wash. (3)
Phyllosticta cirsii Desm., leaf spot. Wash. (6), N.Y. (7), Wis. (8).
Phymatotrichum omnivorum (Shear) Dug., root rot. Tex. (6)
Physalospora obtusa (Schw.) Cke., on stems. Ga. (1)
Puccinia cirsii Lasch (0,I,II,III), rust. On all spp. listed except (7) and on numerous others, from Pa. to N.Car., Tex., Calif. and Ore.
P. obtegens [Ik.] Tul. (P. suaveolens (Pers.) Rabh.) (0,I,II,III), rust. Me. to N.J., Ohio, and west to Calif. and Wash. (7)
Rhizoctonia solani Kuehn, root rot. Ill. (8)
Sclerotinia sclerotiorum (Lib.) DBy., crown rot. Colo., Mont., Ore. (7)
Septoria cirsii Niessl (S. commonsii Ell. & Ev.), leaf spot. Del., Ind., Kans. (1); Ill.; Wis. (2,3); Iowa (2,8); Mich., N.Y., Wis. (4); Vt. to Pa., Ind. and Wis. (7)
Sphaerotheca humuli (DC.) Burr., powdery mildew. Md. (8)
Stagonospora cirsii J.J.Davis, leaf spot. Wis. (1)
Thecaphora trailii Cke., inflorescence smut. Colo., Utah (8)
Uromyces junci (Desm.) Tul. (0,I), rust. Mont., Nebr., N.Dak. (8). II and III on Juncus spp.

CNICUS (COMPOSITAE)

CNICUS BENEDICTUS L., BLESSED THISTLE. Annual herb of s. Europe, cult. for ornament and as a drug plant.

Sclerotium rolfsii Sacc., southern blight. Ga.

COREOPSIS (COMPOSITAE)

COREOPSIS spp., TICKSEED. Annual or perennial herbs, those commonly in cultivation native to N.America and widely distributed from coast to coast, especially C. GRANDIFLORA Nutt. (1) and C. LANCEOLATA L. (2) -- perennial; C. TINCTORIA Nutt. (3) -- annual; other spp. (4)

COREOPSIS cont.

Botrytis cinerea Pers. ex Fr., gray-mold blight. Alaska (1)
Cercospora coreopsidis Ray, leaf spot. Okla. (1)
Coleosporium inconspicuum [Long] Hedgc. & Long (II,III), rust. N. Car. (1,2,3); Tenn. (2,3); Ga., Md., Ohio, S.Car., Va., W.Va. (3). O and I on Pinus spp.
Cuscuta sp., dodder. N.J. (3)
Erysiphe cichoracearum DC., powdery mildew. N.Y. (1); Md., Minn., Wis. (3)
Heterodera marioni (Cornu) Goodey, rootknot. Fla. (3,4)
Phyllosticta coreopsidis Greene, leaf spot. Wis. (3)
Rhizoctonia solani Kuehn, root and stem rot. N.Y. (2); Minn., Tex. (3)
Sclerotinia sclerotiorum (Lib.) DBy., stem rot. Ohio, Wash. (1,3)
Sclerotium rolfsii Sacc., southern blight. Fla. (2), Tex. (3)
Septoria coreopsidis J.J.Davis, leaf spot. Iowa, Wis. (3)
Verticillium albo-atrum Reinke & Berth., wilt. N.Y. (2)

Curly top -- virus (Chlorogenus eutetticola Holmes, Beta virus 1 K.M.Sm.). Calif. (3)
Yellows -- virus (Chlorogenus callistephi Holmes, Callistephus virus 1 K.M.Sm.). N.J., N.Y. (2,3). Also var. californicus. Calif. (3)

COSMOS (COMPOSITAE)

COSMOS BIPINNATUS Cav., COMMON COSMOS (1), and C. SULPHUREUS Cav., YELLOW C. (2). Annual herbs of Mexico, grown for ornament. Also C. CAUDATUS H.B.K. (3), similarly used in the West Indies.

Bacterium solanacearum E.F.Sm., bacterial wilt. N.Car. (1), P.R. (3)
Cercospora sp., leaf spot. Tex. (1)
Cuscuta sp., dodder. N.Y. (1)
Diaporthe stewartii Harrison, stem canker, blight. Conn. to N.J., Kans. and S.Dak.; Calif., Tex. (1)
Erysiphe cichoracearum DC., powdery mildew. Calif., Md., Nebr., N.Car. (1); P.R. (3)
Fusarium sp., wilt. N.J. (1)
Heterodera marioni (Cornu) Goodey, root knot. Fla. (1), Md. (2)
(Phomopsis stewartii Pk.): Diaporthe stewartii
Phymatotrichum omnivorum (Shear) Dug., root rot. Ariz., Tex.(1,2)
Pythium sp., root rot. Md. (1)
Rhizoctonia solani Kuehn, root and stem rot. Conn., Md., Tex. (1)
Sclerotium rolfsii Sacc., southern blight. Miss. (1)
Septoria sp., leaf spot. Conn. (1)
Sphaerotheca humuli (DC.) Burr., powdery mildew. P.R. (2)
Uromyces bidentis Lagh. (III), rust. P.R. (3)

COSMOS cont.

Curly top -- virus (Chlorogenus eutettícola Holmes, Beta virus 1 K.M.Sm.). Calif. (1)

Mosaic -- unidentified virus. Fla., Tex. (1)

Spotted wilt -- virus (Lethum australiense Holmes, Lycopersicon virus 3 K.M.Sm.). Tex. (2)

Yellows -- virus (Chlorogenus callistephi Holmes, Callistephus virus 1 K.M.Sm.), Del., N.J., N.Y. (1). Also var. californicus Holmes. Calif. (1)

CREPIS (COMPOSITAE)

CREPIS spp., HAWKSBEARD. Numerous annual or perennial herbs, native or introduced, on prairies, plains, and waste land in the Eastern, Central and Western States; especially C. ACUMINATA Nutt. (1), C. OCCIDENTALIS Nutt. (2), C. RUNCINATA (James) Torr. & Gray (3), other spp. (4). Some are useful to wildlife; a few may be grown for ornament.

Cercospora stromatis Clements, leaf spot. Colo. (1)

Erysiphe cichoracearum DC., powdery mildew. Pa. (3), Nebr. (4)

Phyllosticta eximia Bub., leaf spot. Colo. (1)

Puccinia crepidis-montanae [Syd.] Magn. (0,I,II,III), rust. Wyo. (1); Colo. (3,4); Mont. (2); Ida., Ore., Utah, Wash. (4)

P. extensicola Plowr. var. hieraciata (Schw.) Arth. (0,I), rust. Mont., Nebr. (3,4); Nev., Wash. (4). II and III on Carex spp.

P. hieracii (Schum.) Mart. (0,I,II,III), rust. N.Dak. to Colo., Calif., and Wash. (1,2,3,4).

P. stipae Arth. (0,I), rust. Mont. (1); Utah, Wash. (4). II and III on Stipa spp. and other grasses.

Ramularia crepidis Ell. & Ev., leaf spot. N.Mex. (4)

Sphaerotheca humuli (DC.) Burr., powdery mildew. Wyo. (3)

CYNARA (COMPOSITAE)

CYNARA CARDUNCULUS L., CARDOON (1), and C. SCOLYMUS L., ARTICHOKE (GLOBE A.) (2). Coarse perennial herbs of s. Europe, the former cult. for edible roots, the latter for the edible receptacle and bracts of the young inflorescence; commercial cultivation chiefly in Calif. and Tex.

Botrytis cinerea Pers. ex Fr., gray mold blight. Calif., N.Y. (2)

Cercospora obscura Heald & Wolf, leaf spot. Calif., Tex. (1,2)

Cladosporium sp., secondary leaf spot. Calif., S.Car. (2)

Erysiphe cichoracearum DC., powdery mildew. Calif. (1,2); ?N.J. (2)

Heterodera marioni (Cornu) Goodey, rootknot. Calif. (2)

CYNARA cont.

Phymatotrichum omnivorum (Shear) Dug., root rot. Tex. (2)
Phytophthora megasperma Drechs., root rot. Calif. (2)
Ramularia cynarae Sacc., leaf spot. Calif. (1,2)
Rhizoctonia solani Kuehn, root and stem rot. Miss. (2)
Sclerotinia sclerotiorum (Lib.) DBy., stem rot. Ore. (2)
Sclerotium rolfsii Sacc., southern blight. Ga. (2)

Yellows -- unidentified virus. Calif. (2)

DAHLIA (COMPOSITAE)

DAHLIA VARIABILIS (Willd.) Desf., DAHLIA. A complex group of garden plants, perennial by tuberous roots, derived from D. pinnata Cav. and D. coccinea Cav., including also D. juarezii Hort., cactus dahlia; originally of Mexico and Guatemala, now widely cult. as a garden flower and for cutting.

Agrobacterium tumefaciens (E.F.Sm. & Town.) Conn, crown gall. Conn., Ill.
Alternaria sp. (? A. tenuis Nees ex Cda.), leaf spot. Vt. to Ala., Mo., and Mich.; Wash. Probably secondary, following hopperburn and other foliage injuries.
Aphelenchoides ritzema-bosi (Schwartz) Steiner & Buhrer, leaf nematode. Calif.
Armillaria mellea Vahl ex Fr., root rot. Calif.
Bacterium solanacearum E.F.Sm., bacterial wilt. Del., Mich., Miss., N.J., N.Car., Okla., Tex. Bacterial wilt, unidentified but probably this, also reported in Md. and Ohio.
Botrytis cinerea Pers. ex Fr., gray-mold blight of buds and flowers, storage rot of tubers. Cosmopolitan.
Cercospora sp., leaf spot. Fla., Miss.
Choanephora americana Moll., blossom blight. Fla.
Entyloma dahliae Syd., leaf smut. Calif., N.J., Ore. In Europe often reported as E. calendulae (Oud.) DBy., and may be only a synonym of this.
Erwinia carotovora (L.R.Jones) Holland, bacterial soft rot (stems) Miss., ? Wash.
E. cytolytica Chester, bacterial rot of stems and tubers. N.Y. See also Bacterium solanacearum.
Erysiphe cichoracearum DC., powdery mildew. General.
E. polygoni DC. Calif., Del., Ga., Iowa, Mo. , N.J., Pa., Va.
Fusarium spp., wilt, root and stem rot. Ariz., Md., Mo., N.H., N.J., N.Y., Ohio. Specific identification lacking, but F. oxysporum type reported associated with wilt, F. roseum type with tuber rot. Fusarium head blight reported in Pa.
Heterodera marioni (Cornu) Goodey, rootknot. N.Car. to Ala., Tex., and Mo.; Ariz., Calif.

DAHLIA cont.

Macrophomina phaseoli (Maubl.) Ashby, charcoal rot. S.Car.
Mycosphaerella dahliae (Cke. & Ell.) Coons, on stems. Mich., N.J., Vt.
Phoma dahliae Berk., on leaves (secondary following hopperburn?) N.J., Ohio. Also reported as Phyllosticta sp. in N.J.
Phymatotrichum omnivorum (Shear) Dug., root rot. Tex.
Physalospora obtusa (Schw.) Cke., on stems. Tex.
Pythium sp., root and stem rot of cuttings, watery rot of tubers. The following identified: P. debaryanum Hesse, in Conn., Md., Wash.; P. oedochilum Drechs. and P. ultimum Trow, in Md.
Rhizoctonia solani Kuehn, stem rot. Md., Miss., N.J., N.Car., Wash.
Sclerotinia sclerotiorum (Lib.) DBy., stem rot. Calif., Me., N.Y.
Sclerotium rolfsii Sacc., southern blight. Fla., Kans., Miss., N.J., N.Car.
Uncinula sp., powdery mildew. N.Car.
Verticillium albo-atrum Reinke & Berth., wilt. Mich., Mo., N.J., Ohio, Tex.

Mosaic (stunt) -- virus (Marmor dahliae Holmes, Dahlia virus 1 K.M. Sm.) General.
Ringspot (spotted wilt) -- virus (Lethum australiense Holmes, Lycopersicon virus 3 K.M.Sm.). Calif., Mich., N.Y., Tex., Wis.
Streak -- suspected virus. ? N.Y.

Hopperburn -- leaf scorch and chlorosis caused by Empoasca fabae Harris, a concomitant factor in stunt. N.Y. to Md., Mo. and Wis.

DIMORPHOTHECA (COMPOSITAE)

DIMORPHOTHECA ANNUA Less. (1) and D. AURANTIACA DC. (2), CAPE MARIGOLD. Annual or perennial herbs of S. Africa, grown as garden flowers.

Botrytis cinerea Pers. ex Fr., gray mold blight. Conn., Alaska (1,2)
Fusarium sp., wilt. Fla. (1)
Heterodera marioni (Cornu) Goodey, rootknot. Fla. (2)
Puccinia flaveriae Jacks. (III), rust. Ill., N.J. (2). Also Ind., Nebr. on D. cuneata (Thunb.) D.C.
Pythium ultimum Trow, root rot. Calif. (2)
Rhizoctonia solani Kuehn, root rot. Ill.
Verticillium albo-atrum Reinke & Berth., wilt. Iowa, ?N.Y. (2)

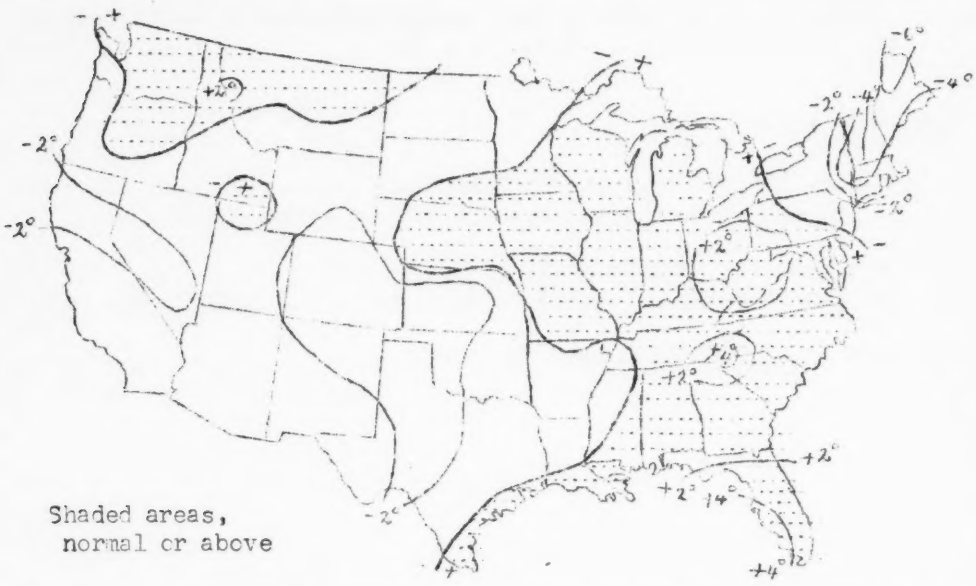
DIMORPHOTHECA cont.
Yellows -- virus (Chlorogenus callistephi Holmes, Callistephus virus 1 K.M.Sm.). N.J., N.Y. (2)

DORONICUM (COMPOSITAE)

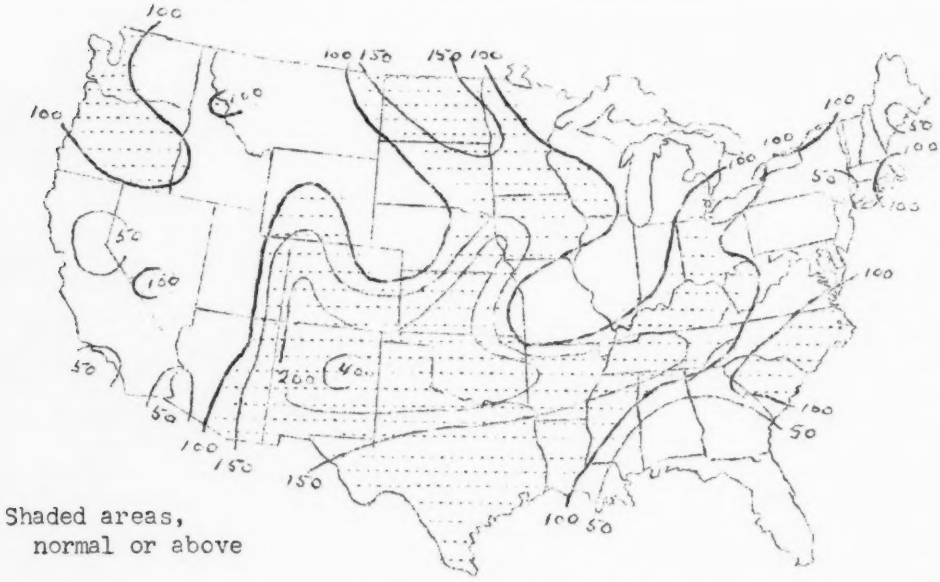
DORONICUM PLANTAGINEUM L., LEOPARDS-BANE (1), other spp. (2). Perennial herbs of s. Europe, grown as garden plants.

Erysiphe sp., powdery mildew. Calif. (1)
Heterodera marioni (Cornu) Goodey, rootknot. Calif., Md. (1,2)

DIVISION OF MYCOLOGY AND DISEASE SURVEY



Map I. Departure of mean temperature from normal, February 1948



Map II. Percentage of normal precipitation, February 1948

FEBRUARY WEATHER

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